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For: METHODS FOR USE IN PACKAGING APPLICATIONS USING AN ADHESIVE COMPOSITION

pads on the dies, as well as the streets between the dies, are free of adhesive material. The adhesive is stated to be a thermoplastic or thermoset adhesive. During a packaging process for attaching a die to a leadframe, the thermoplastic or thermoset adhesive layer is heated and the lead fingers of the leadframe are placed in contact with the die under pressure.

Kato provides a heat-resistant instant adhesive composition comprising a radical polymerizable alpha-cyanoacrylate. The adhesive is instantaneously adhesive at room temperature, and has a sufficiently practical bonding strength at temperatures of 150°C or above.

A proper *prima facie* case of obviousness requires (1) some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings, (2) a reasonable expectation of success, and finally (3) the references must teach or suggest all the claim limitations.

With respect to claim 1, Applicants respectfully submit that the cited documents fail to support a proper *prima facie* case of obviousness. For example, the cited references fail to provide a sufficient suggestion or motivation to modify or combine the references.

Farnworth provides a method for attaching a semiconductor die to a leadframe with a thermoplastic or a thermoset adhesive. Kato provides a heat-resistant instant adhesive composition comprising a radical polymerizable alpha-cyanoacrylate.

Neither of the cited documents and the Office Action, however, identify a motivation or suggestion as to why one skilled in the art would replace the thermoplastic or the thermoset adhesive of Farnworth with the adhesive of Kato. Farnworth does not identify any problems or concerns with the use of the thermoplastic or the thermoset adhesive. The Office Action does assert that "it is known in the art that cyanoacrylate adhesives are excellent for binding to glass, metals and plastics, and it would be obvious to use this type of adhesive with a lead-frame as they are commonly metal." The Office Action, however, has failed to identify any specific understanding or principle within the knowledge of the skilled artisan that would have provided the motivation to use a different adhesive in Farnworth, such as the one recited in the instant claims.

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Furthermore, the cited documents fail to provide for a reasonable expectation of success. Kato provides heat-resistant instant adhesive compositions comprising a radical polymerizable alpha-cyanoacrylate, but fails to indicate that these adhesives can be used in an adhesive pattern configuration, *e.g.*, one or more zones are essentially free of the instant setting adhesive composition, as recited in claim 1. In fact, Kato lacks any teaching at all concerning whether such an adhesive of Kato can be applied with some zones being essentially free of the adhesive.

Based on the forgoing arguments, Applicants respectfully submit the cited documents fail to support a proper *prima facie* case of obviousness for the rejection of claims 1-6 and 8-10.

Applicants respectfully request reconsideration and allowance of claims 1-6 and 8-10.

Claim 7

Claim 7 was rejected under 35 U.S.C. §103(a) as being unpatentable over Farnworth and Kato as applied to claims 1 above, and further in view of U.S. Patent No. 4,172,907 to Mones *et al.* (hereinafter "Mones"). Applicants respectfully traverse the rejection.

Farnworth and Kato were discussed above. Mones provides a coating of a protective material on IC chips. The protective material is stated to be uniformly applied, preferably by spin coating, where the chips may be precoated with an adhesive promoting substance such as colloidal silica. The protective coating is stated to significantly reduce the risk of physical damage to the chip during manufacture and subsequent use of the electronic device.

Applicants respectfully submit the cited documents fail to support a proper *prima facie* case of obviousness. For example, the cited references fail to provide a suggestion or motivation to modify or combine the references. Farnworth provides a method for attaching a semiconductor die to a leadframe with a thermoplastic or a thermoset adhesive. Kato provides a heat-resistant instant adhesive composition comprising a radical polymerizable alpha-cyanoacrylate. Mones states that an adhesive promoting substance can be precoated on IC chips. The documents and the Office Action, however, fail to identify a motivation or a suggestion for one skilled in the art as to why they would choose to use an adhesive promoting substance with either a thermoplastic, thermoset or an alpha-cyanoacrylate adhesive. Furthermore, Farnworth

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and Kato both fail to teach or suggest that any additional adhesive promoting substances need be used in order to obtain the desired results.

In addition, Mones' adhesive promoting substance is intended for bonding a liquid protective coating that is spun onto a surface. Mones does not teach or suggest that the adhesive promoting substance can be used for promoting the bonding of the solid surfaces of, for example, a leadframe and a die with a thermoplastic, a thermoset or a alpha-cyanoacrylate adhesive. Therefore, one skilled in the art would not be motivated to modify or combine Farnworth, Kato and Mones as asserted in the Office Action.

In addition, Applicants repeat the argument presented above for claim 1 in support of the patentability of claim 7.

Based on the forgoing arguments, Applicants respectfully submit the cited documents fail to support a proper *prima facie* case of obviousness for the rejection of claim 7.

Applicants respectfully request reconsideration and allowance of claim 7.

Claims 11-14, 22-27, 31-33, 90-92

Claims 11-14, 22-27, and 31-33 were rejected under 35 U.S.C. §103(a) as being unpatentable over Farnworth in view of Kato and U.S. Patent No. 4,720,513 to Kameyama *et al.* Claims 90-92 were rejected under 35 U.S.C. §103(a) as being unpatentable over Farnworth and Kato as applied to claim 11 above, and further in view of U.S. Patent No. 4,321,180 to Kimura *et al.* and Examiner's Official Notice. Applicants respectfully traverse the rejection.

With respect to claims 11 and 22, Applicants respectfully submit the cited documents fail to support a proper *prima facie* case of obviousness. Applicants respectfully repeat the argument presented above for claim 1 in support of the position that the cited documents fail to support a proper *prima facie* case of obviousness. Furthermore, Kameyama lacks any teaching at all concerning whether such an adhesive of Kameyama can be applied with some zones being essentially free of the adhesive.

Applicants respectfully request reconsideration and allowance of claims 11-14, 22-27, 31-33 and 90-92.

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Claims 34-39, 43-53, 55-59, 61, 62 and 64

Claims 34-39, 43-53, 55-59, 61, 62 and 64 were rejected under 35 U.S.C. §103(a) as being unpatentable over Farnworth in view of Kato. Applicants respectfully traverse the rejection.

With respect to claims 34, 46, 53, 57 and 62, Applicants respectfully submit the cited documents fail to support a proper *prima facie* case of obviousness. Applicants respectfully repeat the argument presented above for claim 1 in support of the position that the cited documents fail to support a proper *prima facie* case of obviousness.

Applicants respectfully request reconsideration and allowance of claims 34-39, 43-53, 55-59, 61, 62 and 64.

Claims 54 and 63

Claims 54 and 63 were rejected under 35 U.S.C. §103(a) as being unpatentable over Farnworth and Kato as applied to claims 53 and 62 above, and further in view of Eichelberger (U.S. Patent No. 5,841,193). Applicants respectfully traverse the rejection.

Applicants repeat the argument presented above for claims 53 and 62 in support of the patentability of claims 54 and 63, respectively.

Applicants respectfully request reconsideration and allowance of claims 54 and 63.

Claim 60

The Examiner rejected claim 60 under 35 U.S.C. §103(a) as being unpatentable over Farnworth and Kato as applied to claims 57 above, and further in view of Farnworth et al. (U.S. Patent No. 5,893,726). Applicants respectfully traverse the rejection.

With respect to claim 60, Applicants respectfully submit the cited documents fail to support a proper *prima facie* case of obviousness. Applicants respectfully repeat the argument presented above for claim 1 in support of the position that the cited documents fail to support a proper *prima facie* case of obviousness.

Applicants respectfully request reconsideration and allowance of claim 60.

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Claims 83-89

Claims 83-89 were rejected under 35 U.S.C. §103(a) as being unpatentable over Farnworth in view of Kato, Kimura et al. (U.S. Patent No. 4,321,180) and Examiner's Official Notice. Applicants respectfully traverse the rejection.

With respect to claim 83-89, Applicants respectfully submit the cited documents fail to support a proper *prima facie* case of obviousness. Applicants respectfully repeat the argument presented above for claim 1 in support of the position that the cited documents fail to support a proper *prima facie* case of obviousness.

Applicants respectfully request reconsideration and allowance of claims 83-89.

Allowable Subject Matter

Applicants thank the Examiner for indicating that claims 28, 30, 40 and 42 were objected to as being dependent upon a rejected base claim, but that they would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 29 and 41 were objected to as being dependent upon objected claims. However, at the present time Applicants believe the claims upon which claims 28, 30, 40 and 42 depend are allowable, and therefore claims 28, 30, 40 and 42 have not been rewritten.

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Summary

It is respectfully submitted that the pending claims 1-14, 22-64 and 83-92 are in condition for allowance and notification to that effect is respectfully requested. The Examiner is invited to contact Applicants' Representatives, at the below-listed telephone number, if it is believed that prosecution of this application may be assisted thereby.

Respectfully submitted for
Cobbley et al.

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The undersigned hereby certifies that this paper is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR §1.10 on the date indicated above and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.

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